
XIX. *A New Arrangement of the Plants of the Monandrian Class usually called Scitamineæ. By William Roscoe, Esq. M.P. F.L.S.*

Read April 15, and May 6, 1806.

THE Scitaminean Plants, so called on account of their aromatic or spicy qualities, occupy the greater portion of the first, or *Monandrian* class, in the Linnæan system of vegetables. They are a tribe of great beauty and considerable utility; natives of warm climates, where they are mostly found in moist situations. The chief part of them have been discovered in the East-Indies; a few in Africa; and still fewer in America.

The first attempt to reduce these plants to their proper genera, appears to have been made by Linnæus, in the *Musa Cliffortiana*.—In his *Fragments of a Natural Order*, he has united them with the *Musæ*; to which, in the more important parts of their fructification, they bear but little affinity.

The disadvantages which attended the study of these plants in the time of Linnæus were, in fact, too great to be surmounted. His descriptions could only have been formed, for the most part, on the labours of preceding botanists; the figures of *Van Rheedé*, *Rumphius*, and others; and in some instances, from dried specimens. In establishing the different genera, he has relied chiefly on the number and form of the petals; without sufficiently attending to those more important parts of the fructification on which the rest of his system is chiefly founded.

After having completed his labours on this subject, so sensible was he of their insufficiency, as expressly to admonish his
readers,

readers, that the characters of many of these plants still remained to be more accurately determined, by those who might have an opportunity of inspecting living specimens; an admonition which every subsequent editor of his works has found it necessary to repeat*.

About the year 1783, a very considerable addition was made to the order of Scitaminean plants, by the labours of *Kænig*; who, in his researches through various parts of the East, discovered many plants of this tribe, of which he communicated full descriptions to his friend *Retzius*, who published them in the third fasciculus of his *Observationes Botanicae*. *Retzius*, being well aware of the imperfections of the Linnæan arrangement of these plants †, thought it necessary to attempt a new one, from the descriptions of his friend; although he had never seen even the dried specimens ‡. The result is such as might have been expected; and he candidly confesses his own doubts, as to the expediency of the method proposed by him §; which has, however, been recognised by *Willdenow*, as the latest improvement on this class.

In one respect *Retzius* is entitled to commendation, as he seems to have been the first to remark the great importance of the *Anthera*, and its appendages, in the proper distinction of these

* "Character *Amomi, Alpinia, Curcumæ, Thalia*, ab autoptis, in plantis vivis, accuratius describendus est." *Willd. Sp. Pl. Berol.* 1797. v. 1. 16.

† "Lectores facili negotio discere possunt characteres generum immortalis a *Linné*, quæ *Scitamineas Monandras* plurimas spectant, omninò insufficientes esse." &c. *Retzii Obs. Bot. Fasc. III.* 47.

‡ "Quid certi ego determinem, qui plantas has nequidem siccatas vidi." *Ibid.*

§ "Sed fateor multa mihi superesse dubia, quin hanc divisionem optimam credam.— Probe video, nihil absolute certi de horum generum characteribus determinari posse, antequam reliquæ *Scitamineæ*, uti *Zingiber, Zedoaria, Cardamoma varia, Galangæ, Curcuma rotunda*, &c., descriptæ sunt." *Ibid.* 48.

plants; a discovery which, however, he has not sufficiently prosecuted, either in the work before referred to, or in his subsequent attempt, in his sixth fasciculus, to establish new genera of these plants.

Since the publications of Retzius, some additions and corrections of the genera and species have been made by Swartz, in his *Observationes Botanicae*; but without any attempt at a systematic order. He concludes his remarks with asserting that "the genera of the Scitamian plants are so nearly related, that they can scarcely be distinguished by characters*."

If we turn from Linnæus and his followers to those who profess to have arranged the individuals of the vegetable kingdom by their natural affinities, we shall discover little further light thrown on the subject. The Scitamian plants form, indeed, a natural order; and Bernard de Jussieu, in his *Ordines Naturales*, has implicitly adopted the arrangement, without adding to the number of the genera of Linnæus †. In the *Genera Plantarum* of A. L. de Jussieu, a few additions are made to those genera ‡; but the more essential parts of the fructification, on which the generic distinctions chiefly depend, are often wholly omitted in his descriptions. Like the rest who have attempted to characterize these plants, he remarks—"that the construction of the various parts of the flower, has induced a variety of opinions as to their denomination and use;" and, "that further observa-

* "Scitamian genera adeo affinia, ut characteribus vix distingui queant." Swartz. *Obs.* 9.

† These consisted of eight genera promiscuously noticed.

Canna.

Maranta.

Amomum.

Curcuma.

Costus.

Kæmpferia.

Alpinia.

Thalia.

‡ Viz. Catimbium (Globba or Renealmia) and Globba, both taken from Linnæus.

tions on living plants are still requisite, in order to form proper distinctive characters*."

Such is the brief and unsatisfactory history of these plants : but some circumstances have of late occurred more favourable to the prosecution of these inquiries. Amidst the great number of plants lately brought into this country, those of the Scitamian tribe have not been neglected. Many of these have produced their flowers ; from which, and from the accurate figures given of others in the excellent botanical works lately published, as well in this country as on the continent, it seems not impracticable to form an arrangement, which may contribute in some degree to remove the inconveniencies of which there has hitherto been but too much reason to complain, and which are the more to be regretted, as they present themselves to the student on the very opening of the Linnæan system.

From the result of observations made on this subject for some years past, I have been led to conclude, that the true generic character of these plants consists in the situation, form and appendages of the anthera, and its petal-like or incrassated filament. In several of the genera which compose this class, the anthera is entire ; but in the truly Scitamian plants it is always double, and is either more or less divided to receive the style, which it closely embraces †. This anthera is supported by an erect strong filament, which Swartz contends is improperly so called, being in fact the upper lip of the nectary ; al-

* " Non facilis floralium distinctio partium ; quarum forma plurimùm variâ diversam induxit autorum sententiam de earundem nomine et usu. Ulterius ergo conferenda in vivis pleraque ordinis genera ; ut consimilia in his et illis organa pateant, et conformis omnium character eruatur." *A. L. de Jussieu Gen. Pl.* 64.

† " In omnibus fere Scitamianis, anthera magis minusve partita, ut quasi duplex interdum inveniatur." *Swartz. Obs.* 9.

though

though he admits that it performs the office of that part*. In some instances this filament terminates with the anthera; but in others is extended beyond it, either in a subulate, ovate, bilobate, or other peculiar form, which I have always found characteristic of the genus; and which, after the great distinction of a single or a double anthera, I consider as the chief generic distinction of these plants.

The first result of this system will be found to be the separation of the true Scitaminean plants from those which, although of the same order, possess neither their peculiar construction nor their inherent qualities. The latter of these may perhaps be properly denominated *Cannæ*; a name applied by Jussieu to the whole tribe; whilst the appellation of *Scitamineæ* should be reserved for the true aromatic plants only. Other important changes will also be indispensably necessary. The genus *Amomum* appears to include two genera, as distinct from each other in their growth, habits, and qualities, as in their generic characters. To one of these, which comprehends the plants of the Ginger tribe, I have given the name of *Zingiber*,—restricting that of *Amomum* to the proper Cardamom plants. By the same method, the *Amomum zedoaria* appears to be a *Curcuma*; the *Alpinia comosa*, and *Alpinia spiralis* of Jacquin are evidently of

* “Lacinia cui anthera adfixa vel inserta improprie *filamentum* dicitur, sed vices ejusdem præbet; *labium superius nectarii* appellari debet.” Swartz. *Obs.* 9.

This is also the opinion of Mr. Dryander, which on this subject, as on all others connected with natural history, is entitled to the highest respect; and Dr. Swartz probably learnt it at Sir Joseph Banks's when in England. In fact, this organ, like many others, both in the animal and vegetable œconomy, performs two offices, and is both the filament supporting the anthera, and the upper lip of the nectary; but I have preferred the denomination of *filament* for the sake of consistency with the other plants of this order, which have a proper filament, to which I have also been induced by the consideration that by this term my meaning is defined in a single word.

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the genus *Costus*; and the *Hellenia* of Willdenow (*Heritiera* of Retzius) and the *Reinealmias* figured in Andrews's Botanist's Repository unite themselves with the genus *Alpinia*.

In forming the generic characters of these plants, I have chiefly relied on the more immediate organs of fructification; without resorting to the exterior parts of the flower, respecting which great confusion has arisen among the writers on this subject.— That part which by some is called the corolla*, is by others denominated the inner calyx †; the outer one being short and sitting close upon the germen. By some the interior limb of the corolla, when it consists only of one petal, is called the nectary ‡, whilst others apply that name to both the interior petal and its opposite anthera-bearing filament, considering the nectary as bilabiate §. Other authors have considered the glandular appendages at the base of the corolla as the nectary ||; and the descriptions of these have been mistaken for what has been called the interior limb of the corolla ¶. That I may not increase this confusion, I think it necessary to state, that independent of the anthera-bearing filament and style, I consider the flower of a true Scitaminean plant as consisting of an exterior bractea or scale, a proper calyx, a corolla mostly divided into three lobes or sections, enclosing an interior limb, which has sometimes two or three segments, but invariably a petal-like nectary, which generally terminates in a large pendulous coloured lip, and forms the most conspicuous and ornamental part of the flower.

I must however observe that none of these last-mentioned parts can be relied on for generic distinctions, as they frequently differ greatly in the different species of the same genus. But

* Linnæus and his editors, &c.

† Jussieu.

‡ Jacquin frequently, but not invariably.

§ Swartz.

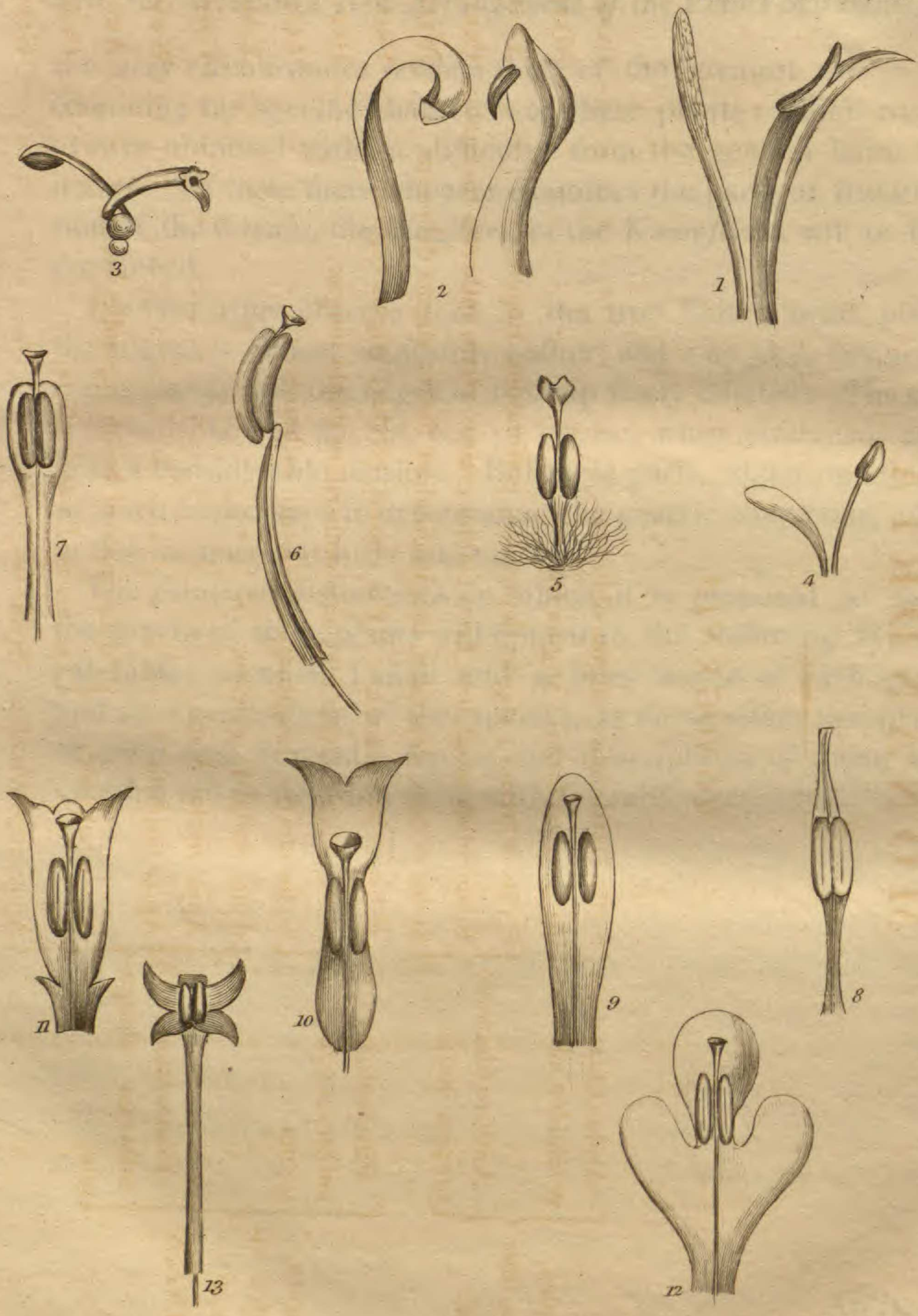
|| Retzius.

¶ Willdenow.

this very circumstance renders them of the greatest use in determining the specific characters of these plants; which are not always obtained without difficulty from the general habit and leaves. Of these facts whoever examines the parts of fructification of the *Cannas*, the *Zingibers*, or the *Kæmpferias*, will be fully convinced.

I must further observe that in the true Scitaminean plants, the stigma is almost uniformly hollow and cup-like, frequently compressed, with the edges of the cup finely ciliated. The style is thread-like and flaccid, but so elastic, when stretched, as to bear a considerable tension. But these parts, which are often of so much importance in determining the generic characters, afford in this instance but little assistance.

The principal distinctions on which it is proposed to found the genera of these plants will appear in the following synoptical table; to which I shall add a brief notice of each genus, and an examination of the species, as far as either the plants, or good and authentic figures and descriptions of them, have enabled me to ascertain them with tolerable accuracy.



MONANDRIA.

MONOGYNIA.

Anthera simplex, Stylus erectus, liber. CANNÆ	Anthera filamento petaloideo adnata,	{ Stylus claviformis; stigma obtusum. - - - - - CANNA.
Anthera duplex, Stylus in sulco an- theræ receptus. SCITAMINEÆ	Anthera filamento proprio innixa.	{ Stylus depressus; stigma depressum, perforatum, ringens. - - - - - THALIA.
		{ Filamentum subulatum, breve; stylus crassus, versus antheram inclinatus. PHRYNIUM.
	Filamentum extra antheram non elon- gatum.	{ Stylus crassus, depressus, longitudinaliter fissus; stigma dehiscens. - - - - - MYROSA.
		{ ad basim lanuginosum; stylus crassus, erectus; stigma capitatum. - - - - - PHILYDRUM.
		{ geniculatum; stylus filamento antherifero duplò longior. - - - - - HEDYCHIUM.
Filamentum extra antheram elonga- tum.	{ Stylus erectus, longitudine filamenti antheriferi. - - - - - ALPINIA.	
	{ Apice subulato, sulcato. - - - - - ZINGIBER.	
	{ Apice ovato, plano. - - - - - COSTUS.	
	{ Apice bilobato. - - - - - KÆMPFERIA.	
	{ Apice trilobato. - - - - - AMOMUM.	
	{ Apice appendiculato; Stylus longissimus. - - - - - CURCUMA.	
	{ Apice appendiculato; Stylus longissimus. - - - - - GLOBBA.	

CANNA.

Anthera simplex, filamenti margini adnata. *Stylus* crassus, claviformis. *Stigma* obtusum. *Capsula* trilocularis. *Semina* globosa, numerosa.

TAB. XX. Fig. 1.

This genus is one of the most definite and certain of the Monandrian plants. The species of which it is composed are not of extraordinary rarity, and produce their flowers freely. The essential character consists in the single anthera, attached to the margin of the petal-like filament; and in the strong erect club-shaped style.

C. indica. Corollæ limbo interiore trifido; laciniis lanceolatis acuminatis strictis.

Canna indica, var. *rubra* (α) *Aiton. Hort. Kew.*

Fig. Gærtner. 1. 37. tab. 12.

Botanic Garden, Liverpool.

C. coccinea. Corollæ limbo interiore trifido; laciniis emarginatis strictis.

Canna indica var. *coccinea* (γ) *Aiton. Hort. Kew.*

Fig. Curt. Bot. Mag. tab. 454.

Bot. Gard. Liverpool.

C. patens. Corollæ limbo interiore trifido; laciniis reflexis.

Canna indica, var. *patens* (δ) *Aiton. Hort. Kew.*

C. lutea. Corollæ limbo interiore bifido.

Canna indica, var. *lutea* (β) *Aiton. Hort. Kew.*

Bot. Gard. Liverpool.

C. glauca.

C. glauca. Corollæ limbo interiore trifido; laciniis ovatis strictis, nectario trilobato fimbriato.

Fig. *Dillen. Hort. Elth.* 69. *tab.* 59. *fig.* 69.

Bot. Gard. Liverpool.

C. flaccida. Corollæ limbo interiore trifido; laciniis flaccidis.

Fig. *Salisb. Ic. tab.* 2.

Bot. Gard. Liverpool.

MARANTA.

Anthera simplex, filamento adnata. *Stylus* petaliformis.
Stigma subtrigonum. *Semen* unicum.

TAB. XX. Fig. 2.

Maranta agrees with *Canna* in the single anthera being attached to the petal-like filament; but is sufficiently distinguished by the broad, petal-like, reflected style, terminated by an angular stigma.

It is surprising that any difficulty should have arisen in distinguishing the plants of this genus from those of *Alpinia*; which are true Scitaminean plants, with the filiform style supported by the furrow of the double anthera; whilst in *Maranta* the anthera is single, and the style is perfectly free.

M. arundinacea. Culmo ramoso herbaceo, foliis ovato-lanceolatis subtùs pilosiusculis. *Willd. Sp. Pl.* 1. 13.

Fig. *Martyn. Cent.* 39. *tab.* 39.

Bot. Gard. Liverpool.

M. lutea. Culmo ramoso nodoso, foliis ovatis, floribus spicatis, bracteis coloratis.

Fig. *Jac. Ic. Rar. v.* 2. *tab.* 101. *Collect. v.* 4. 117.

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M. comosa.

M. comosa. ? Linn. Suppl. 80.

Communicated by Dr. Smith from the Linnæan Herbarium.—*An novum genus?*

M. sylvatica. ?—Bot. Gard. Liverpool; but has not yet flowered.

THALIA.

Anthera simplex, ovata, filamento proprio depresso innixa. *Stylus* brevis, ab antherâ deflexus. *Stigma* perforatum, ringens. *Capsula* bilocularis. *Semina* duo, glabra, splendentia.

TAB. XX. Fig. 3.

This genus, although considered by Swartz as obscure, and founded by Linnæus on the figure of Plumier only, is well distinguished from the rest of the order, and confirmed by the discovery of additional species. In their habit, these plants nearly approach *Maranta*, but differ greatly in their fructification; having a proper stamen and style, reflexed in opposite directions.

T. geniculata. Calyce unifloro, culmo ramoso, petiolis ganglionosis.

Fig. Plum. Amer. 98. tab. 108.

T. dealbata. calyce bifloro, culmo arundinaceo pulverulento, foliis apice revolutis.

Fig. Fraser Ic.

Bot. Gard. Liverpool.

PHRYNIUM.

Anthera simplex. *Filamentum* subulatum, breve. *Stylus* crassus, brevis, antheram versùs inclinatus. *Capsula* trilocularis. *Semen* unicum, ovatum, læve.

From the *Phyllodes placentaria* of Loureiro, Willdenow has constituted this genus, which he has referred to the *Hort. Mal.* v. 11. tab. 34. This figure was considered as the *Pontederia ovata* of Linnæus; but Swartz, in his *Obs.*, p. 123, has observed that it is of the Monandrian class, nearly allied to *Thalia*, and perhaps a species of that genus.

The full description given by Loureiro enables us to characterize it as a genus, with tolerable accuracy; and its singular mode of inflorescence, from the petiole of the flowering leaf, distinguishes it from all the rest of the Monandrian plants.

P. capitatum. Willd. *Sp. Pl.* v. 1. 17.

Fig. Rheede, *Hort. Mal.* v. 11. tab. 34.

MYROSMA.

Anthera simplex. *Stylus* crassus, depressus, longitudinaliter fissus, brevis. *Stigma* dehiscens. *Capsula* trigona, trilocularis, polysperma.

TAB. XX. Fig. 4.

In stamen and style this genus resembles *Thalia*, from which it differs in having a trilocular capsule with many seeds. Willdenow observes that it is likewise allied to *Phrynium*, but differs also in the fruit.

M. cannæformis. Willd. *Sp. Pl.* v. 1. 13.

M. can-

M. cannæfolia. Linn. *Suppl.* 80.

Erroneously referred by Linnæus to Rheede, *Hort. Mal.* v. 11. *tab.* 34. (*Phrynium capitatum*) to which figure Gmelin has also referred his *Maranta Alloveria*, and *Pontederia ovata*.

PHILYDRUM.

Anthera duplex. Filamentum ad basin lanuginosum, extra antheram non elongatum. Stylus erectus, in sulco antheræ receptus. Stigma capitatum. Capsula trilocularis. Semina numerosissima, minutissima, scabrata.

TAB. XX. *Fig.* 5.

From the plant named by Loureiro *Garcinia cochinchinensis*, this genus was formed by Sir Joseph Banks, (who found the plant in New Holland) and has been adopted by Gærtner and Willdenow. Although differing greatly in its habit from the rest of the order, it appears to be a true Scitamian plant; the anthera embracing the style, and the dried flowers, when immersed in boiling water, emitting a strong aromatic odour.

P. lanuginosum. Wild. *Sp. Pl.* v. 1. 17.

Fig. Curt. *Bot. Mag.* t. 783. Gærtner. v. 1. 62. *tab.* 16. *fig.* 10.

HEDYCHIUM.

Anthera duplex. Filamentum geniculatum, extra antheram non elongatum. Stylus filamento duplò longior, filiformis, tenacissimus, in sulco antheræ receptus.

TAB. XX. *Fig.* 6.

The observation of Retzius, repeated by Jussieu, that *Hedychium*
is

is nearly allied to *Kæmpferia*, seems not to have been founded on any actual inspection of the plants, which differ no less in their habit than in their fructification. Not to mention the long linear segments of the exterior limb of the corolla, by which *Kæmpferia* is distinguished from every other genus, the difference between it and *Hedychium* is strongly marked by the anthera-bearing filament; which in *Kæmpferia* extends beyond the anthera, and diverges into two foliaceous lobes, whilst in *Hedychium* the anthera is terminal, naked, and affixed to each margin of the filament.

To *Alpinia*, *Hedychium* is more nearly related; but is sufficiently distinguished by its long tube and interior trifid corolla. It may also be observed that in *Alpinia*, the double anthera is attached in two adjacent lobes to the front of the filament, and not to the revolute margins, as in *Hedychium*.

H. coronarium. Willd. Sp. Pl. v. 1. 10.

Fig. Curt. Bot. Mag. 708.

Bot. Gard. Liverpool.

ALPINIA.

Anthera duplex. *Filamentum* extra antheram non elongatum. *Stylus* longitudine filamenti, in sulco antheræ receptus. *Stigma* obsoletè trigonum. *Capsula* carnosa.

TAB. XX. Fig. 7.

The genus *Alpinia* is founded on the plant figured by Plumier, *Americ. tab.* 20. the *Alpinia racemosa* of Linnæus; of which a specimen remains in his herbarium, which I have had an opportunity of examining, by the favour of its present liberal possessor, and which well agrees with the description. Its first cha-

characteristic is its simple uncrowned filament, terminating with the anthera which it supports; a distinction which separates it from all the rest of the tribe, except *Philydrum* and *Hedychium*; from the first of which it is distinguished by the absence of the woolly appendage at the base of the tube; from the latter, by the anthera not being placed marginally on the filament; and from both by its corolla, which (independent of the large-lobed lip of the nectarium) consists of only three segments, without any interior limb.

I have no hesitation in referring to this genus the *Hellenia* of Willdenow *, (*Heretiera Retzii*) and the plants given as *Renealmias* in Andrews's *Botanists Repository* (*fig.* 360 and 421). These plants all agree with *Alpinia* both in habit and fructification. The growth is caulescent, the inflorescence terminal, the anthera flat and naked, the corolla has no interior limb (except the large petal-like nectarium may be so called)—circumstances of coincidence which surely forbid their being considered as different genera.

But although the genus *Hellenia* of Willdenow, and the *Renealmias* of Andrews's *Bot. Rep.*, will thus be absorbed in the genus *Alpinia*, this may not be the case with the *Renealmia exaltata*, the plant on which the genus *Renealmia* was founded by the younger Linnæus; the racemus of which is described as not

* The name of *Hellenia* was first proposed by Retzius, in honour of professor *Hellenius* of Abo, and applied to designate the plant now called *Costus speciosus*, which had before been named by Kœnig *Banksia speciosa*, and which Retzius had before intended to name *Swartzia*, but found that two genera had already been named by different persons after the eminent botanist to whom that appellation alludes. Willdenow being aware that this plant was the *Costus speciosus*, abolished the name of *Hellenia* as applied to it, but gave the same name to another tribe of Monandrian plants, the *Languis* of Kœnig; which Retzius had before, in his sixth Fasciculus, named *Heritiera*; that appellation having also been pre-occupied.

terminal,

terminal, but is said to rise from the trunk near the root. It must, however, be observed, that this part of the description was adopted, as Dr. Smith informs me, from the figures of Rumphius, v. 6. fig. 62, 63. which are now ascertained to be wrong; and the synonym is consequently rejected by Willdenow. Whether the *Renealmia exaltata* may be found to be an *Alpinia* *, I have had no opportunity of determining. On this subject the observations of Mr. Haworth in the Bot. Rep. p. 421. are entitled to particular attention.

A. racemosa. Nectario trifido, foliis ovato-lanceolatis apice revolutis, capsulis striatis.

Fig. Plum. Amer. tab. 20.

A. Galanga. Nectario emarginato, foliis lanceolatis enervibus, capsulâ trigono-ovatâ glabrâ.

Maranta Galanga. Linn.

Amomum Galanga. Lour. Fl. Coch. 5.

Fig. Rumph. Amb. v. 5. tab. 63.

A. occidentalis. Swartz Prodr.

Nectario emarginato, foliis lanceolato-ovatis glaberrimis.

Dr. Smith has communicated a flower of this species from a West Indian specimen.

A. malaccensis. Nectario apice denticulato, culmo simplici, foliis oblongis petiolatis subtùs sericeo-pubescentibus.

Willd.

Maranta malaccensis. Willd. Sp. Pl. v. 1. 14.

Fig. Rumph. Amb. v. 5. 177. tab. 71. fig. 1.

* Dr. Smith is of opinion, that the parts of its flower precisely agree with those of *Renealmia nutans*, which is certainly an *Alpinia*.

A. Allughas. Nectario bilobato, foliis lanceolatis integerrimis, capsulis subspongiosis.

Hellenia Allughas. Willd. *Sp. Pl.* v. 1. 4.

Heritiera Allughas. Retz.

Fig. Retz. *Obs. fasc.* 6. 17. tab. 1. *Anne Hort. Mal.* v. 11. tab. 14. ?

A. alba. Nectario bilobato, foliis integerrimis margine callosis albicantibus ciliatis, capsulâ obsolete angulosâ coloratâ.

Hellenia alba. Willd. *Sp. Pl.* v. 1. 5.

Languas vulgare. Kœnig. in Retz. *Obs. fasc.* 3. 64.

Heritiera alba. Retz. *Obs. fasc.* 6. 18.

A. chinensis. Nectario margine denticulato, foliis oblongis subciliatis apice recurvatis.

Hellenia chinensis. Willd. *Sp. Pl.* v. 1. 5.

Heritiera chinensis. Retz. *Obs. fasc.* 6. 18.

A. aquatica. Nectario obcordato quadridentato, foliis acutis denticulatis, capsulâ glabrâ, seminibus quinque pluribusve.

Hellenia aquatica. Willd. *Sp. Pl.* v. 1. 5.

Heritiera aquatica. Retz. *Obs. fasc.* 6. 18.

A. nutans. Nectario obsolete trilobato margine involuto, foliis lanceolatis, capsulâ membranaceâ lanuginosâ.

Globba nutans. Linn. *Mant.* 2. 170.

Fig. *Andr. Bot. Rep.* tab. 360.

Bot. Gard. Liverpool.

A. calcarata.

A. calcarata. Nectario ovato-oblongo apice semibifido, foliis ensiformibus, capsulâ hirtâ.

Fig. *Andr. Bot. Rep. tab.* 421.

A. maculata? Foliis ovatis maculatis.

Bot. Gard. Liverpool.

ZINGIBER.

Anthera duplex. Filamentum extra antheram elongatum; apice subulatum, sulcatum. *Stylus* in sulco antheræ receptus.

TAB. XX. Fig. 8.

It has been well remarked by Jussieu, that the *Zingibers* flower in a dense spike near to the stem, the *Cardamoms* in a lax panicle at the base of the stem*. Such an uniform natural distinction in the habit of these plants gave great reason to suppose that by a closer examination sufficient generic distinctions would be ascertained. This expectation has been fully confirmed. In the plants of the Ginger tribe, it appears that the anthera-bearing filament is extended beyond the anthera, and terminates in an awl-shaped appendage, with a groove or furrow to receive the style after it has passed between the lobes of the anthera, and which terminates with the stigma a little beyond the extremity of the filament; but in the plants of the Cardamom or proper *Amomum* tribe, the anthera-bearing filament terminates in an appendage of three or more lobes, and differs also in other respects, as will be more particularly noticed under the genus *Amomum*.

* Flores in *Zingiberibus* densè spicati, spicâ radicali propè caulem; in *Cardamomis* paniculati, ad basim caulis. *Juss. Gen.* 63.

In adopting the name of *Zingiber*, I may be supposed to have followed Gærtner; but it must be observed, that Gærtner seems merely to have changed the name of *Amomum* for that of *Zingiber*. At least, the plants described by him under that name are all of the Cardamom tribe.

Z. officinale. Bracteis ovato-lanceolatis, laciniis corollæ revolutis, nectario trilobato.

Amomum Zingiber. Willd. *Sp. Pl.* v. 1. 6.

Fig. Jacq. *Hort. Vind.* v. 1. t. 75.

Bot. Gard. Liverpool.

Z. Zerumbet. Bracteis ovatis obtusis, laciniis corollæ erectis acutis, nectario bilobato.

Amomum Zerumbet. Willd. *Sp. Pl.* v. 1. 6.

Zingiber Spurium. Kænig.

Dryander in *Trans. of Linn. Soc.* v. 2. 213.

Fig. Jacq. *Hort. Vind.* v. 3. t. 54.

Bot. Gard. Liverpool.

Z. Mioga. Laciniis corollæ acutis concavis æqualibus, nectario ovato concavo.

Fig. Banks. *Ic. Kæmpf. tab.* 1.

Z. roseum. Bracteis lanceolatis coloratis, laciniis corollæ revolutis, nectario ovato plano.

Fig. Roxb. *Pl. Corom.* v. 2. t. 126.

Z. purpureum. Bracteis ovatis coloratis, laciniis corollæ erectis, nectario bilobato.

Bot. Gard. Liverpool.

To the foregoing species several others may perhaps be added. I have two plants not hitherto described, which have not yet flowered; but which I conceive to be of this genus. The leaves of both, when rubbed, emit a strong cinnamon-like odour; but they are probably specifically distinct from each other, the leaves of the one being ovate, and of the other lanceolate.

COSTUS.

Anthera duplex. Filamentum extra antheram elongatum, apice ovato-lanceolatum, planum. Capsula trilocularis, extùs dehiscens. Semina numerosa.

TAB. XX. Fig. 9.

Although highly ornamental plants, the part on which the generic distinction is chiefly founded is more simple in these than in almost any others of the tribe; the filament being petal-like, linear, flat, extending beyond the anthera, and terminating in an ovato-lanceolate apex. In their natural habit these plants are distinguished from the rest of the order by their inclined and spiral stem, which is frequently hirsute and sometimes frutescent.

C. speciosus. Nectario obsolete trilobato undulato fimbriato, foliis subtùs sericeo-villosis.

Costus speciosus. Smith in *Trans. of Linn. Soc.* v. 1. 249.

Fig. *Jacq. Pl. Rar.* v. 1. tab. 1.

Bot. Gard. Liverpool.

C. arabicus. Nectario ovato integerrimo, foliis utrinque glabris.

Fig. *Rheede Hort. Mal.* v. 11. tab. 8?

C. spicatus.

C. spicatus. Willd. *Sp. Pl.* v. 1. 10.

Nectario undulato sub-trifido, foliis acuminatis integerrimis nitidis basi attenuatis.

Alpinia spicata. Jacq.

Fig. Jacq. *Amer. tab.* 1.

C. comosus. Nectario crasso oblongo canaliculato erecto apice quinquedentato, foliis lanceolatis undulatis utrinque subvillosis.

Alpinia comosa. Willd. *Sp. Pl.* v. 1. 12.

Fig. Jacq. *Pl. Rar.* v. 2. *tab.* 202.

C. spiralis. Nectario concavo integerrimo, foliis elongato-ellipticis coriaceis nitidis.

Alpinia spiralis. Jacq.

Fig. Jacq. *Hort. Schonb.* v. 1. *tab.* 1.

KÆMPFERIA.

Anthera duplex. Filamentum extra antheram elongatum, apice bilobatum. Corollæ laciniaë lineares, acutæ.

TAB. XX. Fig. 10.

By the two-lobed apex of the anthera-bearing filament this genus is sufficiently distinguished from the rest of the tribe. It is not however without other striking characters; among which the long linear segments of the exterior limb of the corolla are the most remarkable. The fructification of these plants arises without either scape or stem, from a general involucre or spathe, closely sessile on the root; containing a considerable number of flowers, each rising in succession, and furnished with a proper calyx.

K. rotunda.

K. rotunda. Nectarii laciniis dorsalibus lanceolatis acutis; anticâ bipartitâ: lacinulis obovatis, foliis oblongis subtùs coloratis.

Kæmpferia rotunda. Linn. *Sp. Pl. ed. 2. 3.*

Fig. *Rheede Hort. Mal. v. 11. t. 9.* *Jacq. Hort. Schonb. v. 3. tab. 317.* *Curt. Mag. t. 920.*

Bot. Gard. Liverpool.

K. Galanga. Nectarii laciniis dorsalibus obtusis, obsolete trilobatis; anticâ bilobâ undulatâ, foliis ovatis subtùs pallidis.

Alpinia sessilis. Retz. *Obs. fasc. 3. 62.*

Fig. *Rheede Hort. Mal. v. 11. t. 41.*

Bot. Gard. Liverpool.

K. angustifolia. Nectarii laciniis dorsalibus linearibus obtusis; anticâ emarginatâ, foliis lanceolatis subtùs pallescentibus.

Bot. Gard. Liverpool.

K. ovata. Nectario lanceolato, foliis ovatis.

Kæmpferia rotunda. Donn. *Hort. Cantab. 1.*

Fig. *Rheede Hort. Mal. v. 11. tab. 10.* Referred to by Linn. as *Curcuma rotunda.*

AMOMUM.

Anthera duplex. Filamentum extra antheram elongatum, apice trilobatum, basi utrinque appendiculatum.

TAB. XX. Fig. 11.

Although sufficient be known of the Cardamoms to distinguish them from the Zingibers, with which they have been hitherto

hitherto united under the common name of *Amomum*, yet further observations on living plants will be necessary to ascertain their specific distinctions. A specimen of the plant on which the genus *Amomum* was founded by Linnæus is preserved in his herbarium; the flower of which I have, by the favour of Dr. Smith, had an opportunity of examining; and have no hesitation in considering it as a distinct genus from *Zingiber*, and as agreeing in its generic distinctions with the *Amomum angustifolium* of Sonnerat, and with several others which will be enumerated amongst the species. In the trilobate apex of the filament this genus may be thought to resemble *Curcuma*; but the difference between them consists in the anthera being placed in *Curcuma* on the middle segment of the filament; whilst in *Amomum* it occupies the entire filament; and in the Linnæan specimen the two lobes of the anthera seem to be placed near the margins of the filament, and only to approach each other by their being rolled in to receive the style. To this it may be added that the middle segment of the filament is in some species of *Amomum* bifid.

A. cardamomum. Ex Herb. Linn.

Spica radicali sessili obovata, foliis obovato-ellipticis cuspidatis. Willd. *Sp. Pl.* v. 1. 8.

Amomum verum. Ger. *emac.* 1548. f. 6.

Amomo legitimo degli antichi. Pona Baldo. 50.

Cardamomum minus. Rumph. *Amb.* v. 5. 122.

tab. 65. f. 1. Bont. *Hist. Nat.* 126. cum icone

(exclusâ capsulâ, quæ Cardamomi medii est).

Zingiber minus. Gært. tab. 12. *

* These synonyms have been settled by Dr. Smith from a comparison of authentic specimens.

- A. angustifolium.* Scapo nudo brevissimo, spicâ capitatâ, foliis lineari-lanceolatis. *Willd. Sp. Pl. v. 1. 8.*
Amomum angustifolium. *Sonnerat Ind. Orn. v. 2. 242. t. 137.*
Cardamomum majus. *Offic.*
Zingiber Meleguetta. *Gærtn. tab. 12. fig. 1.*
- A. repens* *. Scapo ramoso decumbente, foliis lanceolatis. *Willd. Sp. Pl. v. 1. 9.*
Amomum repens. *Sonnerat Ind. Orn. v. 2. 240. t. 136.*
Fig. Rheede Hort. Mal. v. 11. tab. 4. 5.
Bot. Gard. Liverpool; but has not flowered.
- A. Grana Paradisi.* Scapo ramoso laxo, foliis ovatis. *Willd. Sp. Pl. v. 1. 9.*
Fig. Rheede Hort. Mal. v. 11. tab. 6?
- A. villosum.* Scapo vaginato brevissimo, spicâ subrotundâ, bracteis lanceolatis flore longioribus. *Willd. Sp. Pl. v. 1. 8.*
Fig. Rumph. Amb. v. 6. 137. tab. 61. fig. 2.
- A. uliginosum.* Floribus pedunculatis, caulibus remotis, foliis acutis, capsulis globosis echinatis. *Retz. Obs. fasc. 3. 56.*
- A. echinatum.* Spicâ radicali sessili subglobosâ, capsulis sulcatis echinatis globosis. *Willd. Sp. Pl. v. 1. 8.*
Amomum, n. 2. Retz. Obs. fasc. 3. 50.
Fig. Rumph. Amb. v. 6. 137. tab. 61. fig. 1.

* Dr. Smith is persuaded that this species, which affords the common Lesser Cardamom of the shops, is really an *Alpinia*.

A. Afzelii. Scapo brevissimo, floribus aggregatis, foliis distantibus ovato-acuminatis integerrimis glabris.

Amomum exscapum. Sims.

Fig. *Annals of Botany*, No. 3. tab. 13.

CURCUMA.

Anthera duplex, bicalcarata. *Filamentum* petaliforme, trilobatum, medio antheriferum.

TAB. XX. Fig. 12.

This genus is not less distinguished from *Amomum* and *Zingiber* (with which it has often been confounded) by its general habit and inflorescence, than by the parts of its fructification. In all the species the leaves are radical; but *Zingiber* and *Amomum* are both caulescent. *Curcuma* flowers from a simple scapus. The flowers are enveloped in large loose bracteæ, and not in compact scales as in *Zingiber*. From some circumstance, not easy to be accounted for, Linnæus has characterized this genus as having four barren stamina and one fertile stamen; a peculiarity which no subsequent inquirer has been able to discover. Mr. Dryander supposes that the generic character of Linnæus was derived from his *Curcuma rotunda*, the *Manja Kua* of the Hortus Malabaricus*, which I have already referred to as *Kæmpferia ovata*.

C. Zedoaria. Foliis ovatis acuminatis, bracteis emarginatis.

Amomum Zedoaria. Willd. *Sp. Pl.* v. 1. 7.

Fig. *Rheede Hort. Mal.* v. 11. tab. 7.

Swartz *Obs.* p. 8. supposes the above figure to be the

* *Trans. of Linn. Soc.* vol. 2. 212.

Amomum Curcuma or *Curcuma longa*; and Jacquin (*Hort. Vind. tom. 3. 7.*) considers it as at least of the same genus.

C. montana. Foliis ovatis acuminatis, bracteis lanceolatis apice coloratis.

Fig. Roxb. *Pl. Corom. v. 2. tab. 151.*

C. longa. Foliis ovato-lanceolatis, bracteis spatulatis.

Amomum Curcuma. Jacq.

Fig. Jacq. *Hort. Vind. v. 3. tab. 4.*

Bot. Gard. Liverpool.

The *Curcuma rotunda* of Willd. referred to the fig. in Hort. Mal. v. 11. tab. 10. is a *Kæmpferia*, as above mentioned.

GLOBBA.

Anthera duplex. Filamentum lineare, incurvatum, longissimum, appendiculatum. Stylus laxis, filiformis, in medio antheræ receptus. Stigma incrassatum. Nectarium utrinque bifidum.

TAB. XX. Fig. 13.

No genus in the whole order is more beautifully distinguished by its generic characters than *Globba*, of which one species only has been introduced, and that very recently, into this country. Its chief peculiarity consists in its anthera-bearing filament, which is of a very uncommon length, and terminates in an appendage resembling, in one species at least, two crescents or half-moons united to each other with the horns or points in opposite directions. At the union of these is placed the double anthera supporting the long filiform style, which frequently appears like a